SN: 071-0026

Bridge Condition Report

DISTRICT: 2

ROUTE: IL 2

SECTION: 38V (Original), 38VB-1 (Recon.)

COUNTY: Ogle

STRUCTURE NUMBER: 071-0026 (EXISTING)

LOCATION: IL 2 over the BN RR (1.2 miles South of IL 64)

PREPARED BY: Kenneth S. Couperus

DATE PREPARED: February 2008

PROPOSED LETTING DATE: Unknown

I. Geographical & Administrative Data:

Structure Number: 071-0026
County: Ogle
Route Carried: IL Route 2
Feature Crossed: Burlington Northern Railroad
Section: 38V (Original), 38VB-1 (Reconstruction)
Station: 7+68.1

Roadway Classification: Other Principal Arterial
Design/Posted Speed: 55 MPH/ 55 MPH
ADT (current/future): 2007 (4700) / 2021 (6700)
ADTT (current/future): 2007 (423) / 2021(603)
DHV: 470
Inventory Rating HS: 22.5
Operating Rating HS: 46.0
Sufficiency Rating: 53.0

Construction / Reconstruction / Repair History:

Construction: The original structure was built in **1928** as a four span Reinforced Concrete Tee Beam superstructure built on 2 spill through abutments and 3 multi column piers founded on spread footings with a 4 inch concrete wearing surface under SBI 2, Section 38V.

Reconstruction: During **1979**, new stub abutments were placed and the existing piers were widened both founded on metal shell concrete piles along with a new PPC Deck Beam superstructure and a bituminous concrete wearing surface under section 38VB-1, CN: 33302. **Note:** Beams for span 1 and 4 were salvaged from SBI 86, section 105BR, Whiteside County, CN: 28136. These beams were cast in 1970, used briefly for a temporary structure and then stored at the Rock Falls Yard until 1979.

Rehabilitation: In **1996** the bituminous wearing surface was replaced with a 5" concrete overlay and all new expansion joints under section 38VB-1-M, CN: 64081.

II. Physical Description of Structure:

Structure 071-0026 is a simple four span PPC Deck Beam superstructure with 15 beam lines on two open reinforced concrete stub abutments founded on concrete and steel HP piles and three reinforced concrete multi column piers founded on spread footings (original portion) and concrete piles (widened portion) with zero skew angle. There are PJS expansion joints at the abutments and Piers 1 and 2.

There are no bearings (has fabric bearing pads) on this structure. There is a 5 inch thick concrete overlay on the superstructure.

The back-to-back abutment length is 231ft 6-1/2 inches and the span lengths are 62ft 3-1/2" (span 1), 54ft -4" (spans 2 & 3), and 61ft- 3" (span 4). All beams are 27" deep and 36" wide. The out-to-out deck width is 45ft.

The structure provides for one 12' traffic lane in each direction with 10ft concrete shoulders on each side. There are no sidewalks. The railing consists of a double steel tube type T mounted to W8 X 28 posts.

The existing structure is located on tangent horizontally and on the high point of a vertical curve near the North end of the structure. The approach roadway template at the South approach is a 24ft bituminous pavement with 10 ft concrete shoulders and at the North approach is a 24ft concrete pavement with 10ft concrete shoulders.

The slope walls consist of 4 inch thick concrete. **There are Power lines running under span 4 near the South face of Pier 3 which parallel the RR tracks.**

III. Field Inspection & Physical Evaluation:

Wearing Surface: The concrete overlay is **12** years old and in **satisfactory** condition. There are numerous hairline to narrow reflective keyway cracks showing over the majority of the structure.

The bridge rail, transitions and ends are substandard.

Superstructure: The superstructure is **29** years old and in **poor** condition. Note: The salvaged beams are 38 years old. There are 19 beams with areas of delaminations or spalls. 15 of the 19 are located at the beam ends. See the damage report and the survey in attachment E for locations and photos of damaged areas. A few of the worst beams are Beam 1 in Span 2 with 7 of 8 strands remaining in the bottom layer, Beam 2 in Span 3 with 5 of 8 strands remaining in the bottom layer and Beam 14 in Span 3 with 6 of 8 strands remaining in the bottom layer. The keyways are not leaking heavily yet and no independent movement has been identified.

Substructure: The original portions of the piers are **80** years old and the newer portions of the substructure are **29** years old and in **fair** condition. There are numerous locations of large spalls with exposed reinforcement and delaminations on all 3 piers. The North face of pier 1 is especially bad. There are several medium to wide cracks in the pier walls. The pier caps are heavily stained from leaking joints and wet most of the time. The abutment caps are stained from heavy leaking and are wet most of the time. There are several narrow vertical cracks visible on the caps.

The small wing walls exhibit narrow map cracking in small areas and are wet near the abutments.

Inspection History (NBIS Ratings):

Year	Deck (58)	Super (59)	Sub (60)
2007	4	4	5
2006 November	4	4	5
2006 May	6	6	5
2004	7	7	5
2003	7	7	5
2001	7	7	5
1999	7	7	5

Geometric/Hydraulic Data:

The deck geometry is rated a 6-equal to present minimum criteria and the under clearance-vertical and lateral appraisal are rated 4-minimum adequacy to be left in place and the structural evaluation is rated 4-minimum adequacy to be left in place. There is no waterway or drainage flowing under this structure

IV. Potential Scope of Work Determination & Analysis:

Due to the rapid deterioration, recent problems and concerns associated with PPC Deck beam superstructures, the age and condition of the substructure, and the unwritten policy that structures that have previously had major rehabilitations will not have them again (economically restrictive) it is recommended that the scope of work for this structure is complete structure replacement. Due to the above discussion elevation view surveys of the substructure showing deteriorated areas and a plan view deck survey showing delaminated areas are not provided in this Bridge Condition Report.

V. Discussion and Recommended Scope of Work:

The recommended scope of work for this structure is complete replacement at an estimated cost of $1,252,800.00.

Traffic Control: Because this is a deck beam superstructure, the traffic control during construction should be evaluated during Phase I in programming using TMA-Traffic Management Analysis. (To be determined by Program Development). Note: for staging purposes both directions are in similar condition at the time of this BCR preparation. **During the 1979 reconstruction the traffic was detoured. Coordination with the RR will also be required-i.e. flaggers.**

ATTACHMENTS:

Illinois Department of Transportation
Structures Information Management System
Master Structure Report (S-107)

Structure Number: 071-0026 **District: 2**

Inventory Data

Facility Carried:	ILL 2	**Bridge Name:**		**Sufficiency Rating:**	53.0
Feature Crossed:	BN RAILROAD	**Location:**	S EDGE OREGON	**HBRRP Eligible:**	Yes
Bridge Remarks:				**Replaced By:**	000-0000
Bridge Status:	1 OPEN - NO RESTRICT	**StatusDate:**	04/1988	**Replaces:**	000-0000
Status Remarks:				**Last Update Date:**	12/11/2007
Maint County:	071 OGLE	**Maint Township:**	26 OREGON-NASHUA	**Parallel Structure:**	None
Maint Responsibility:	01 I.D.O.T.			**Multi-Level Structure Nbr:**	
Service On/Under:	1 HIGHWAY / 2 RAILROAD			**Skew Direction:**	None
Reporting Agency:	1 I.D.O.T. - BUREAU OF MAINTENANCE			**Skew Angle:**	00 D 00 M 00 S
Main Span Matl/Type:	5 PRESTRESS CONCRETE / 05 BOX BEAM OR GIRDER-MULTIPLE			**Structure Flared:**	No
Nbr Of Main Spans:	4	**Nbr Of Approach Spans:**	0	**Historical Significance:**	No

Structure Length:	232.0	**Navigation Control:**	N N/A
AASHTO Bridge Length:	99.9	**Navigation Horiz Clear:**	0
Length of Long Span:	61.0	**Navigation Vert Clear:**	0
Bridge Roadway Width:	43.0		
Appr Roadway Width:	44.0		
Deck Width:	45.0		
Sidewalk Width Right:	0.0		
Sidewalk Width Left:	0.0		

Approaches

Near #1 Matl/Type:	/	**Bdr State SN:**		**Culvert Fill Depth:**	0.0
Near #2 Matl/Type:	/	**Bdr State % Responsibility:**	0	**Number Culvert Cells:**	0
Far #1 Matl/Type:	/	**Structural Steel Wt:**	0	**Culvert Opening Area:**	0.0
Far #2 Matl/Type:	/	**Substructure Material:**		**Culvert Cell Height:**	0.00
Median Width/Type:	0 Ft. / 0 None	**Rated By:**	2 IDOT	**Culvert Cell Width:**	0.00
Guardrail Type L/R:	0 None / 0 None	**Inventory Rating:**	22.5 (241)	**Rate Method:**	1 LOAD FACTOR
Toll Facility Indicator:	0 No Toll	**Operating Rating:**	46.0 (283)	**Load Rating Date:**	07/13/2007
Latitude:	42 D 00 M 6.43 S	**Longitude:**	89 D 20 M 14.13 S	**Design Load:**	02 HS20
Deck Structure Type:	E PCAST PRES CN DK BM	**Deck Structure Thickness:**	27.0		
Sidewalks Under Structure:	0 None				

Railroad Crossing Info

Crossing 1 Nbr:	069826H
Crossing 1 Nbr:	
RR Lateral Underclear:	08.0
RR Vertical Underclear:	22 Ft 11 In

Key Route On Data

Key Route Nbr:	FEDERAL-AID PRIMARY 0742	**Station:**	018.320
Appurtenances	Main Route 00.000	**Segment:**	
Inventory County:	071 OGLE	**Linked:**	Y
Township/Road Dist	26 OREGON-NASHUA	**Natl. Hwy System:**	Not on NHS
Municipality	4425 OREGON	**Inventory Direction:**	S South
Urban Area:	None	**Curr AADT Yr/Count:**	2007 / 4700
Functional Class:	30 OTHER PRINCIPAL ARTERIAL	**Est Truck Percentage:**	9
**** CLEARANCES ****	**South/East** **North/West**	**Number Of Lanes:**	2
Max Rdwy Width:	043.0	**One Or Two Way:**	2 Two-Way
Horizontal:	044.5 000.0	**Bypass Length:**	30
Min Vertical:	99 Ft 11 In 00 Ft 00 In	**Future AADT Yr/Cnt:**	2021 / 6700
10 Ft Vertical:	99 Ft 11 In 00 Ft 00 In	**Designated Truck Rte:**	CLASS II
Lateral:		**Special Systems:**	No

Key Route Under Data

		Station:	
		Segment:	
		Linked:	
		Natl. Hwy System:	
		Inventory Direction:	
		Curr AADT Yr/Count:	/
		Est Truck Percentage:	
		Number Of Lanes:	
South/East	**North/West**	**One Or Two Way:**	
		Bypass Length:	
Ft In Ft In	Ft In Ft In	**Future AADT Yr/Cnt:**	/
Ft In Ft In	Ft In Ft In	**Designated Truck Rte:**	
Ft	Ft	**Special Systems:**	

*** Marked Route On Data ***

	Designation	Kind	Number
Route #1:	1 Mainline	3 State Highway	0002
Route #2:			
Route #3:			

*** Marked Route Under Data ***

	Designation	Kind	Number

Illinois Department of Transportation
Structures Information Management System
Master Structure Report (S-107)

Structure Number: 071-0026 **District: 2**

Data Related to Inspection Information

***Inspection Intervals ***

Routine NBIS: 12 MOS Underwater: 0 MOS
Fracture Critical: 0 MOS Special: MOS

*** Maximum Allowable Posting Limits ***

One Truck At A Time:
Single Unit Vehicles: Tons
Combination Type 3S-1: Tons
Combination Type 3S-2: Tons

Bridge Posting Level: 5 No Posting Required

Inspection/Appraisal Information

Inspection Date: 10/22/2007 Inspection Temperature: 50 Deg. F

Deck:	4	POOR CONDITION - ADVANCED DETERIORATION
Superstructure:	4	POOR CONDITION - ADVANCED DETERIORATION
Substructure:	5	FAIR CONDITION - MINOR SECTION LOSS, CRACKS
Culvert:	N	NOT APPLICABLE
Channel and Protection:	N	NOT APPLICABLE
Structural Evaluation:	4	MINIMUM ADEQUACY TO BE LEFT IN PLACE
Deck Geometry:	6	EQUAL TO PRESENT MINIMUM CRITERIA
Underclearance-Vert/Lat.:	4	MINIMUM ADEQUACY TO BE LEFT IN PLACE
Waterway Adequacy:	N	NOT APPLICABLE
Approach Roadway Align:	8	EQUAL TO PRESENT DESIRABLE CRITERIA
Bridge Railing Appraisal:	2	Doesn't Meet Standards
Approach Guardrail:	2 8 3 2	~~Acceptable~~ Not Acceptable ~~Acceptable~~ Not
Pier Navig Protection:	N	N/A

Insp by (Name): MARDAUSSRW
Insp by (Name):

Utilities Attached: N N/A; N N/A; N N/A

Deck Wearing Surf: B AD CN OVLY NT SP MX
Deck Membrane: A WATERPROOF MEM SYST
Deck Protection: J NONE
Total Deck Thick: 33.3
Last Paint Date:

Inspection Remarks:

** Actual Posted Limits **

Single Unit Vehicles: Tons
Combination Type 3S-1: Tons
Combination Type 3S-2: Tons
One Truck At A Time:

Last Paint Type:

Underwater Inspection/Appraisal Information

Inspection Date: Inspection Category:
Temperature: Inspection Method:
Inspected By: Inspected By: Appraisal Rating:
Inspection Remarks:

Scour Critical Information

Rating: Evaluation Method:
Analysis Date: Analysis By:

Miscellaneous

Fracture Critical Members: No
Microfilm Data Recorded: Yes

Construction Information

Year:	1929 Original		1979 Reconstructed	
Route:	FA 742	Sta: 7+68.10	FA 742	Sta: 7+68.10
Section Nbr:	38-V		38VB-1	
Contract Nbr:				
Fed Aid Pr #:	00000000000000		00000000000000	
Built By:	1 I.D.O.T.		1 I.D.O.T.	

Waterway Information

Flood Design Frequency: 0 YRS Drainage Area: 0 Acre
Flood Design Q (CFS): 0
Flood Design Nat H W E: 0 Flood Base Q (CFS): 0
Flood Des Open Prop: 0 SF Flood Base Nat H W E: 0

Proposed Improvement

Cost Estimate Year: Length:
Type of Work:
Done By:
Remarks:

*** Costs in Dollars ***

Bridge Cost:
Roadway Cost:
Total Project Cost:

Illinois Department of Transportation

Bridge Inspection Report (SI)

Structure Number: 071-0026

Location & Inventory Information

Maint. Co: OGLE **Twsp:** OREGON-NASHUA **Status:** OPEN - NO RESTRICT

Facility Carried: ILL 2 **Feature Crossed:** BN RAILROAD Team/Sub Section 231 / 200

Location: S EDGE OREGON **Municipality:** OREGON

Total # Spans: 4 **Material:** PRESTRESS CONCRETE **Type:** BOX BEAM OR GIRDER-MULTIPLE

Inspection Intervals (Mo.): Routine NBIS 12 **/ Fracture Critical** 0 **/ Underwater –** 0

90 – Inspection Date:	/ /	**90C – Temp. (°F):**		**93C – Special Inspection Date:**	/ /
90A – Inspection Team Leader:		**Qualification:**			

Inspector's Appraisals

	Prev	New		Prev	New		Prev	New
58 – Deck Condition:	4		**62 – Culvert Condition:**	N		**72 – Approach Rdwy Align:**	8	
59 – Superstructure Cond:	4		**61 – Channel Condition:**	N		**111 – Pier Navig Protection:**	N	
60 – Substructure Cond:	5		**71 – Waterway Adequacy:**	N				

Appraisal Comments:

Additional Inspection Data

	Prev	New		Prev	New		Prev	New
36A – Bridge Railing Adequacy:	2		**Approach Guardrail Adequacy: 36B – Transitions:**	3/2		**36C – Guardrail:**	3		**36D – Ends:**	3/2	

Railing Comments:

	Prev	New		Prev	New		Prev	New
108A – Wearing Surface Type:	B		**108B – Type of Membrane:**	A		**108C – Deck Protection:**	J	
108D – Total Deck Thickness (In.):	33.3							

Deck Comments:

	Prev	New
59A – Paint Date (Mo/Yr):		/
59B – Paint Systems:		

Paint Comments:

Color: Fascia – _____; Inter. – _____; Railing – _____.

	Prev	New
59C – Utilities Attached:	NNN	

Utilities Comments:

Weight Limit Posting:

	Prev	New		Prev	New
70A2 – Single Unit Vehicles:		T.			
Combination Vehicles: 70B2 – 3 or 4 Axles:		T.	**70C2 – 5 or More Axles:**		T.
70D2 – One Truck at a Time:					

Posting Comments:

90B – Inspection Remarks: (Note: 237 characters maximum)

Previous Inspection	
New Inspection	

	Signature	Date	Supervisor Init. & Date
Inspection Team Leader:		/ /	

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Element Level Field Inspection Report

SN: 0710026 **District:** 2 **Spans:** 4 **Appr. Spans:** 0 **Skew:** 00 **ADT:** 4700 **Truck Pct:** 9 **ADT Un:** 0

Facility Carried: ILL 2 **Name:**

Feature Crossed: BN RAILROAD **Location:** S EDGE OREGON

Inspection Date: 10/23/2007 **Inspection Notes:** Numerous reflective keyway cracks to WS.

Inspector 1: COUPERUSKS

Inspector 2: **Temp:** 50

Resources

Time to Insp:	0:30	Trffc Ctrl:	1	Boat:		Waders:		Snooper:	
		Ladder:		Manlift:		Other:			

Inspector's Appraisals

Elem	Element Desc	Env	Quantity	Un	CS1	CS2	CS3	CS4	CS5
22	Concrete Deck Protected w/ Rigid Overlay	3	10269	SF	10269	0	0	0	0
	Remarks: Numerous reflective keyway cracks to WS.								
104	P/S Conc Closed Web/Box Girder	3	3420	LF	3190	0	50	180	0
	Remarks:								
108	Keyway	3	3248	LF	3248	0	0	0	0
	Remarks:								
205	Reinforced Conc Column or Pile Extension	1	2948	SF	2518	150	280	0	0
	Remarks:								
210	Reinforced Conc Pier Wall	1	5088	SF	4908	60	120	0	0
	Remarks:								
215	Reinforced Conc Abutment	1	345	SF	315	30	0	0	0
	Remarks: Wet from leaking joints.								

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Element Level Field Inspection Report

SN: 0710026 **District:** 2 **Spans:** 4 **Appr. Spans:** 0 **Skew:** 00 **ADT:** 4700 **Truck Pct:** 9 **ADT Un:** 0

234	Reinforced Conc Pier or Abutment Cap	1	231	LF	156	75	0	0	0
	Remarks: Wet from leaking joints.								
302	Preformed Joint Seal	3	225	LF	90	135	0	0	0
	Remarks: Numerous PJS leaking								
323	Approach Pavement	3	2	EA	2	0	0	0	0
	Remarks:								
330	Metal Bridge Railing	3	459	LF	459	0	0	0	0
	Remarks:								

Inspected By: _____